2006 CATALOG

TORREY PINES SCIENTIFIC, INC.

Temperature Control Specialists

EchoTherm™ Digital and Analog Chilling and Heating Laboratory Equipment

About Us

At Torrey Pines Scientific, Inc. we design, develop, manufacture and sell chilling and heating laboratory equipment with analog and digital controls for use in the biotech, pharmaceutical, environmental, chemical, biomedical and other laboratories.

Torrey Pines Scientific, Inc. was founded in 1995 in Solana Beach, California, twenty miles north of San Diego, the west coast capital of the biomedical industry. We are a manufacturing company whose principals have over 50 years experience in designing and manufacturing high quality, unique analog and digital chilling and heating equipment. New products and new applications for existing products are being developed continuously by our marketing and engineering staffs to make your laboratory job easier. We are dedicated to excellence and innovation, and we take pride in our superior customer service. All our products are made in the USA and will be certified by UL, CSA and CE or equivalent agencies for safety.

Where To Order

We sell through some of the finest stocking distributors in the USA and around the world. These distributors are trained to sell and service our products. You can order directly from them, or you can order from us. You can call, fax, or e-mail us directly to order or to find the distributor closest to you. For ordering information outside the USA please contact us for the distributor in your country.

We accept orders by VISA and MASTERCARD as well as company purchase orders.

How To Reach Us

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About Peltier Technology

Many of our products are based on Peltier technology to heat and chill. For those of you not familiar with this technology, we have a brief description here.

Peltier or thermoelectric cooling/heating is semiconductor-based. It has solid-state material in a module that functions as a small heat pump. By applying a low voltage DC power source to the module, heat will be moved through the module from one side to the other. One module face will be cooled while the other face heats. This effect can be reversed by reversing the current flow through the module. Thus the module can be used to heat or chill. We apply this principle to our chilling/heating incubators and chilling/heating dry baths, HPLC column chiller/heater and chilling/heating mini-circulator. They are very efficient and very good at controlling temperature ABOVE, BELOW, and DIRECTLY AT ROOM TEMPERATURE. They have very few moving parts, and no compressors or gases.

Chilling/Heating & Orbital Mixing Dry Baths

Chilling/Heating Dry Baths

There are 5 models of digital chilling/heating dry baths and 1 model of analog chilling only dry bath in our product range. They share many common features and applications with some features specific to individual models. The chart below will make the differences clear. All have the same size plate, 2.875" (7.3 cm) x 4.375" (11.1 cm), and all use the same sample blocks. All the digital units have an RS232 I/O port, 30-day countdown timer with alarm and user settable Auto-Off, built-in data logger, electronic calibration, backlit two-line alphanumeric display with 16 characters per line, and UP/DOWN arrow front panel membrane switch for complete control of all functions. Two units are fully programmable and will store 5 routines in memory, and two of the units have built-in orbital shakers for mixing while heating or chilling. They all control temperature to 1ºC from -10ºC to 100ºC. The analog unit chills only and to 30ºC below ambient without controls. It makes an excellent replacement for an ice bath. All units are Peltier-based with no compressors or CFC's to worry about.

The chart below shows our complete range and features for each.

SOME APPLICATIONS

- Maintaining 14ºC for ligation reactions
- Maintaining 17ºC for storing oocytes
- Enzyme reactions and deactivations
- Storing enzymes and DNA libraries at your work station
- Incubating samples at 37ºC
- Storing samples at ice bucket temperatures without the ice
- Incubating or chilling samples in 96 and 384-well assay plates
- Hybridizations
- PCR sample prep
- General molecular biology

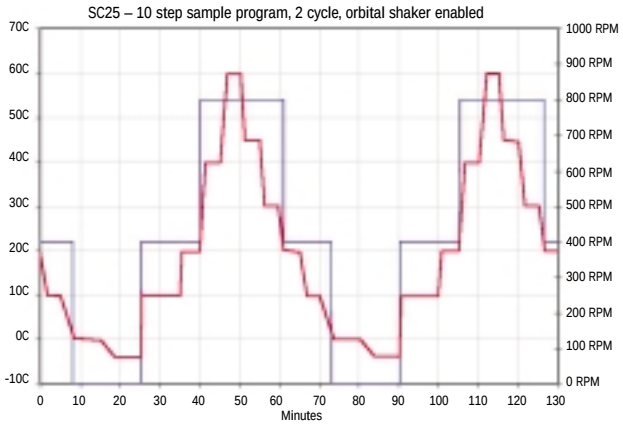
Features	Models					
	SC25	SC20	IC22	IC25	IC20	IC10
Peltier Driven	Yes	Yes	Yes	Yes	Yes	Yes
Built-in Orbital Shaker	Yes	Yes	No	No	No	No
Stores 5 Programs in Memory	Yes	No	No	Yes	No	N/A
Digital Controls	Yes	Yes	Yes	Yes	Yes	No
Number of Sample Blocks	1	1	2	1	1	1
Temperature Range	-10 to 100C	-10 to 100C	-10 to 100C	-10 to 100C	-10 to 100C	30C Below Ambient
Temperature Readability	1C	1C	1C	1C	1C	N/A
Temperature Accuracy	+/- 1C	+/- 1C	+/- 1C	+/- 1C	+/- 1C	N/A
Temperature Stability	1C	1C	1C	1C	1C	N/A
PID Temperature Control	Yes	Yes	Yes	Yes	Yes	N/A
Temperature Uniformity 0.5C	Yes	Yes	Yes	Yes	Yes	Yes
30-Day Countdown Timer	Yes	Yes	Yes	Yes	Yes	N/A
Audible Alarm	Yes	Yes	Yes	Yes	Yes	N/A
Auto Off, User Settable	Yes	Yes	Yes	Yes	Yes	N/A
RS232 I/O Port	Yes	Yes	Yes	Yes	Yes	N/A
Data Logger	Yes	Yes	Yes	Yes	Yes	N/A
Operating Power	12VDC	12VDC	100/115/230VAC	12VDC	12VDC	12VDC

Chilling/Heating Dry Baths

Model SC25 - Programmable, Orbital Mixing Chilling / Heating Dry Bath

The SC25 is a fully programmable chilling/heating dry bath with built-in orbital mixer. The unit can store 5 programs in memory of as many as 10 steps per program where each step can be a temperature, time and mixing speed. Each program can be repeated from 1 to 99 times automatically.

The SC25 has speeds for mixing settable from 200 to 1000 rpm. The temperature range is -10ºC to 100ºC. The unit has an RS232 I/O port for recording data or for controlling the unit from a computer. The built-in data logger can store 7825 data points collectable in 1 second, 1 minute or 5 minute intervals. It accepts the full range of sample blocks listed on page 7 for centrifuge tubes, assay plates, vials, and test tubes. The unit is provided with a 12VDC bench top power supply that takes AC inputs from 100 to 260VAC, 50/60 Hz. It comes complete with users manual, 3-wire AC line cord for the country of use, and full 12-month warranty. The unit measures only 14.5" (36.83 cm) deep x 7.75" (19.69 cm) wide x 4.25" (10.8 cm) tall without a sample block. It weighs about 10 pounds (4.5 kg). It is UL, CSA, and CE compliant.



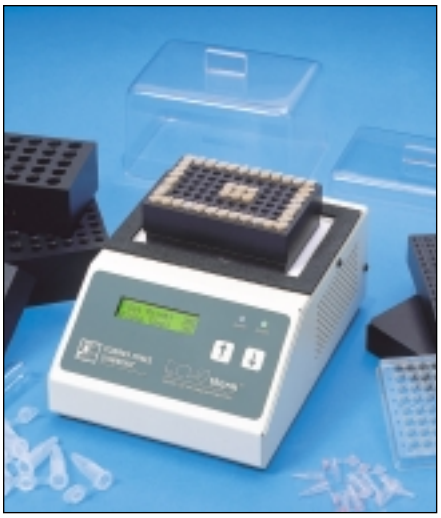
The graph above shows a temperature, time and mixing speed profile that can be stored in memory in the SC25 and rerun at any time.

Model SC20 - Orbital Mixing Chilling / Heating Dry Bath

The Model SC20 is a non-programmable version of the SC25. Like the SC25, the SC20 has a built-in orbital mixer with speeds settable from 200 to 1000 rpm and a temperature range from -10ºC to 100ºC. It has an RS232 I/O port for recording data or for controlling the unit from a computer. The built-in data logger can store 8110 data points collectable in 1 second, 1 minute, or 5 minute intervals. It accepts the full range of sample blocks listed on page 7 for centrifuge tubes, assay plates, vials, and test tubes. The unit is provided with a 12VDC bench top power supply that takes AC inputs from 100 to 260VAC, 50/60 Hz. It comes complete with user's manual, 3-wire AC line cord for the country of use, and a full 12-month warranty. The unit measures 14.5" (36.83 cm) deep x 7.75" (19.69 cm) wide x 4.25" (10.8 cm) tall without a sample block. It weighs about 10 pounds (4.5 kg). It is UL, CSA, and CE compliant.

Model IC20 - Chilling / Heating Dry Bath

NEW! Model IC20XT
Extended Chilling Range
from -20ºC to 85ºC
now available.



The Model IC20 is a simple set-and-forget chilling/heating dry bath. Set the temperature anywhere from -10ºC to 100ºC and the unit goes there. To change temperature, simply set in another target and the unit goes to it.

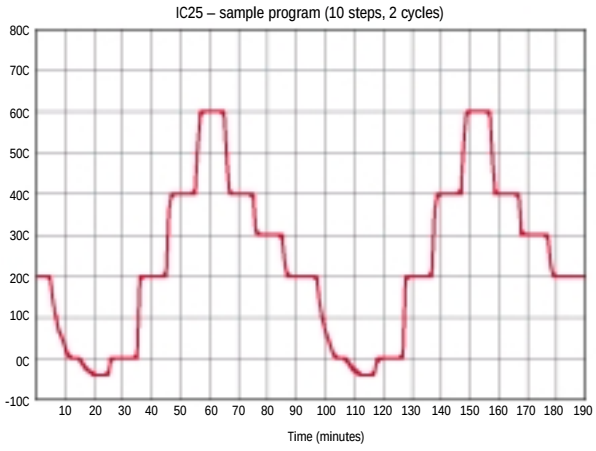
The IC20 has an RS232 I/O port for recording data or for controlling the unit from a computer. The built-in data logger can store 8110 data points collectable in 1 second, 1 minute, or 5 minute intervals. It accepts the full range of sample blocks listed on page 7 for centrifuge tubes, assay plates, vials, and test tubes. The unit is provided with a 12VDC bench top power supply that takes AC inputs from 100 to 260VAC, 50/60 Hz. It comes complete with user's manual, 3-wire AC line cord for the country of use, and full 12-month warranty. The unit is very compact measuring 6.5" (16.5 cm) wide x 8.75" (22.23 cm) deep x 3.5" (5.6 cm) high without a sample block. It weighs about 6.5 pounds (2.9 kg). It is UL, CSA, and CE compliant.

Model IC25 - Fully Programmable Chilling / Heating Dry Bath

NEW! Model IC25XT
Extended Chilling Range
from -20ºC to 85ºC
now available.

The Model IC25 is the fully programmable version of the IC20. Like the IC20 it does not shake, but it can store 5 programs in memory of as many as 10 steps per program where each program step can be a temperature and time. Each program can be repeated from 1 to 99 times automatically.

The IC25 can be set from -10ºC to 100ºC. It has an RS232 I/O port for recording data or for controlling the unit from a computer. The built-in data logger can store 7825 data points collectable in 1 second, 1 minute or 5 minute intervals. It accepts the full range of sample blocks listed on page 7 for centrifuge tubes, assay plates, vials and test tubes. The unit is provided with a 12VDC bench top power supply that takes AC inputs from 100 to 260VAC, 50/60Hz. It comes complete with user's manual, 3-wire AC line cord for the country of use, and a full 12-month warranty. The unit is very compact measuring only 6.5" (16.5 cm) wide x 8.75" (22.23 cm) deep x 3.5" (5.6 cm) high without the sample block. It weighs 6.5 pounds (2.9 kg). It is UL, CSA, and CE compliant.



The graph above shows a temperature and time profile that can be stored in memory in the IC25 and rerun at any time.

Chilling/Heating Dry Baths

NEW! Model IC22XT
Extended Chilling Range
from -20ºC to 85ºC
now available.

Model IC22 - Two Position Chilling / Heating Dry Bath

The Model IC22 is a 2-position, non-programmable chilling/heating dry bath. It is like the IC20 except that it has 2 chilling/heating positions that can be set to the same temperature or 2 different temperatures. The temperature range for both positions is -10ºC to 100ºC. It has an RS232 I/O port for recording data or for controlling the unit from a computer. The built-in data logger can store 8110 data points in 1 second, 1 minute or 5 minute intervals. It accepts the full range of sample blocks listed on page 7 for centrifuge tubes, assay plates, vials and test tubes. The unit has 3 operating models. One for 100VAC, 50/60 Hz for Japan, 115VAC, 50/60 Hz for the US, Canada, and Mexico, and 230VAC, 50/60 Hz for the rest of the world. It comes complete with user's manual, 3-wire AC line cord for the country of use, and full 12-month warranty. The unit measures 6.5" (16.5 cm) wide x 20" (50.8 cm) deep x 3.5" (8.8 cm) high without sample blocks. It weighs 13 pounds (5.85 kg). It is UL, CSA, and CE compliant.

Model IC10 - Electronic Ice Cube

The Model IC10, called the Electronic Ice Cube, is an uncontrolled, Peltier-driven chilling device that chills only. It will go to 30ºC below room temperature. The unit is designed to replace an ice bucket. No more water, mess or changing ice as it melts. The unit has the same size chilling plate as all the other units in this section and uses all the same sample blocks and covers. It is very small and uses virtually no bench space. It is supplied with a 12VDC bench top power supply that takes AC inputs from 100 to 260 VAC, 50/60Hz. It comes complete with cable for a car cigarette lighter for field use, users manual, 3-wire AC line cord for the country of use, and full 12 month warranty. It measures 6.5" (16.5 cm) wide x 4.75" (12 cm) deep x 3.5" (8.9 cm) high. It weighs 6 pounds (2.7 kg). It is UL, CSA, and CE compliant.

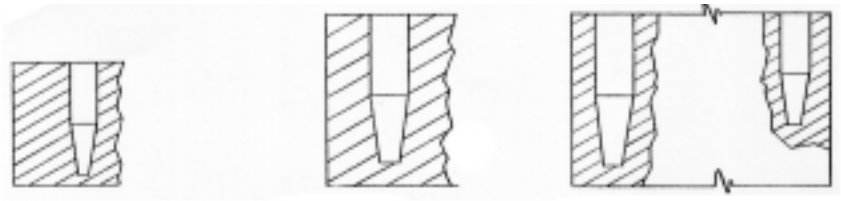
Sample Blocks and Covers

All of the chilling/heating dry baths above can use any of the sample blocks and covers listed here. The blocks are precision machined from solid aluminum to exactly fit the tube shape and then black anodized for better heat transfer and protection from spills. The bottom of the blocks is machined to nest on the dry bath plates to prevent movement. Magnets are used to keep blocks stable on shaking models. Also, custom blocks are available for any sample container on special order.

Clear polycarbonate covers are available for blocks and assay plates. It is recommended that the larger cover be used for most all applications. Cover sizes are 6" (15.24 cm) long x 4.25" (10.8 cm) wide x 2" (5.08 cm) high for the smaller cover, and 6"(15.24 cm) long x 4.25" (10.8 cm) wide x 3.5" (8.89 cm) high for the larger cover.

Precision Sample Blocks

The block at the left is number 620-5013 and is for 30-1.5 ml. centrifuge tubes. The block measures 4.375 in. (11.11 cm.) long by 3.0 in. (7.62 cm.) wide by 1.75 in. (4.45 cm.) thick. All blocks are precision machined from solid aluminum to exactly fit the tube shape and black anodized for better heat transfer and protection from spills. The bottom of the blocks are machined to "nest" on the plate to prevent movement. Also, custom blocks for any sample container can be made upon request.



#620-5012
40-0.5 ml centrifuge tubes

#620-5013
30-1.5 ml centrifuge tubes

#620-5014
15-1.5 ml and 40-0.5 ml centrifuge tubes

#620-5015
96-0.2 ml PCR plates and tube strips of 12 or 8

#620-5016
"V"-bottom
96-well assay plates

#620-5017
"U"-bottom
96-well assay plates

#620-5018
24-2.0 ml vials

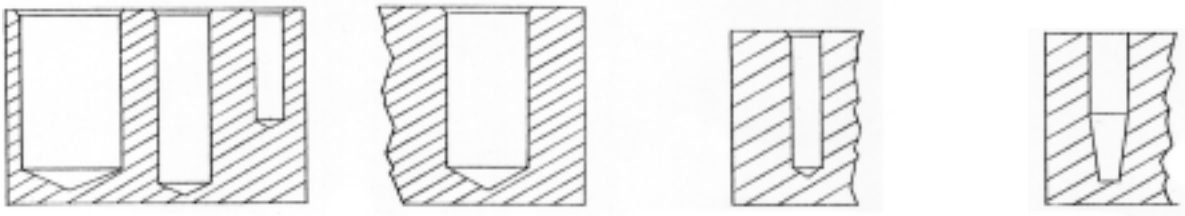
#620-5019
384-well assay plates

#620-5020
Flat bottom 96-well assay plates

#620-5021
24-10 mm test tubes

#620-5022
12-15/16 mm test tubes

#620-5023
20-12/13 mm test tubes

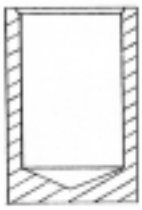


#620-5024
6-6 mm, 5-12/13 mm, and 3-20 mm test tubes

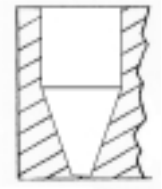
#620-5025
8-20 mm test tubes

#620-5026
30-6 mm test tubes

#620-5027
12-15 ml centrifuge tubes

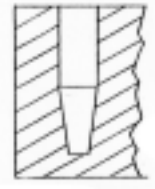


#620-5028
12-20 ml scintillation vials



#620-5030
6-50 ml centrifuge tubes

#620-5031
4 slides for hydridization with cover



#620-5032
30-2.0 ml Eppendorf tubes

Chilling/Heating Incubators

There are 5 models of chilling/heating convection incubators in our product range. All are Peltier-based and have no CFC's or compressors to worry about. They are reliable, accurate and easy to use. Two are fully programmable. Four have temperature ranges from 4.0ºC to 70.0ºC, and all read and regulate temperature to 0.1ºC. Because these units chill and heat they can control temperatures at or near room temperature, and they will hold that temperature regardless of changes in room temperature. All have built-in timers, RS232 I/O ports for recording data or controlling the units by computer, and the programmable models have built-in temperature ramping. They have built-in watchdog circuits and power failure protection that will return the unit to what it was doing when power returns after a power failure. They all share common applications. They are extensively used for growing protein crystals. The chart below will show their features and their differences.

SOME APPLICATIONS

- Protein crystal growth
- Incubating marine sample below ambient
- Enzyme reactions and deactivations
- Hybridizations
- Ligations at 14.0ºC to 16.0ºC
- Storing oocytes at 17.0ºC
- Culture growth below, above and at room temperature
- Storing DNA libraries

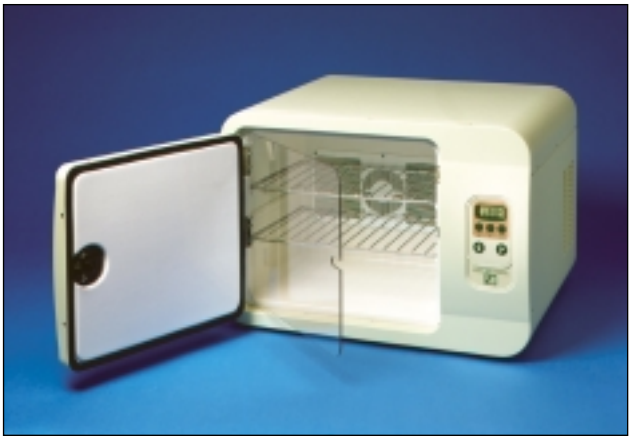
Features	Models				
	IN30	IN35	IN40	IN45	IN20
Peltier Driven	Yes	Yes	Yes	Yes	Yes
Stores Multistep Programs in Memory	No	Yes	No	Yes	No
Digital Display and Control	Yes	Yes	Yes	Yes	Yes
Temperature Range in Degrees Centigrade	4.0 to 70.0	4.0 to 70.0	4.0 to 70.0*	4.0 to 70.0*	10.0 to 50.0
Temperature Readability	0.1C	0.1C	0.1C	0.1C	0.1C
Temperature Accuracy	0.2C	0.2C	0.2C	0.2C	0.2C
Temperature Stability	0.1C	0.1C	0.1C	0.1C	0.1C
PID Temperature Control	Yes	Yes	Yes	Yes	Yes
Temperature Ramping	No	Yes	No	Yes	No
Chamber Uniformity	0.5C	0.5C	0.5C	0.5C	0.5C
Countdown Timer	99 hours	99 days	99 hours	99 days	30 days
Audible Alarm for Timer	Yes	Yes	Yes	Yes	Yes
Auto Off, User Settable	Yes	Yes	Yes	Yes	Yes
RS232 Port	Yes	Yes	Yes	Yes	Yes
Data Logger Built-In	No	No	No	No	Yes
Chamber Volume	27.5L	27.5L	55L	55L	9.8L
Chamber Height	12”	12”	24”	24”	12”
Chamber Width	14”	14”	14”	14”	6”
Chamber Depth	10”	10”	10”	10”	8”
Operating Voltage	100/115/230VAC	100/115/230VAC	100/115/230VAC	100/115/230VAC	12VDC
Number of Shelf Slots	4	4	6	6	6
Number of Shelves Provided	2	2	4	4	6

*When chilling, range is 16.0ºC below ambient max.

Models IN30 and IN40 - Chilling / Heating Incubators

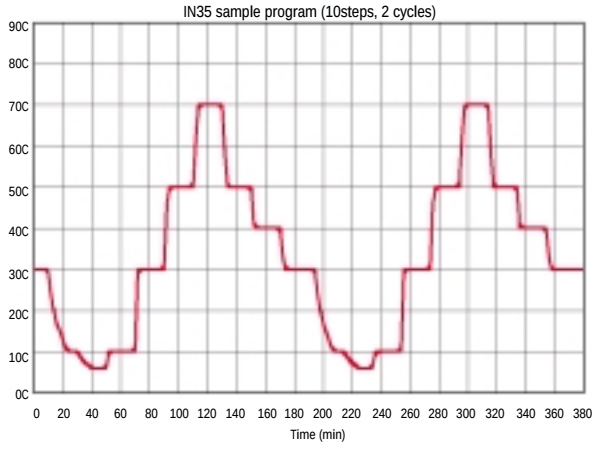
The Models IN30 and IN40 are not programmable. They are simple set-and-forget models. Set the temperature and the unit will go there. To change temperature, simply key in another target. The units are bench top in size. The IN30 has 27.5 liter capacity and the IN40 has 55 liter capacity. Both have a temperature range from 4.0ºC to 70.0ºC. They have seamless, white ABS plastic chambers with capped holes in the left side of the sheet metal case for routing cords for shakers or tubing for gases. They are available in models for 100, 115, and 230VAC, 50/60 Hz. They come complete with user's manual, 3-wire AC line cord for the country of use, and a full 12 month warranty. The IN30 measures 15.5" (39.4 cm) high x 22.25" (56.5 cm) wide x 18.5" (47 cm) deep and weighs 40 pounds (18 kg). The IN40 measures 28.25" (71.75 cm) high x 22.25" (56.5 cm) wide x 18.5" (47 cm) deep and weighs 46 pounds (20.7 kg). All are UL, CSA, and CE certified.

Models IN35 and IN45 - Fully Programmable Chilling / Heating Incubators



The Models IN35 and IN45 are fully programmable. These units have a 2-line, 16-character per line alphanumeric display showing all parameters when programming and running programs. They can store 3 programs in memory for instant recall and use at any time. Each program has ten steps available where each step is a temperature, time, and temperature ramp rate (if wanted). Steps can be set for running multiple "ramp and soak" cycles, or for just running at one temperature for a given time and then switching automatically to another temperature. At the end of each program is a "cycle" step which can be set to repeat the prior steps 1 to 99 times. They also can be set to a single temperature without using the program mode just like the IN30 and IN40.

The IN35 has 27.5 liter capacity and the IN45 has 55 liter capacity. Both have a temperature range from 4.0ºC to 70.0ºC. They have seamless, white ABS plastic chambers with a capped hole in the left side of the sheet metal case for routing cords for shakers or tubing for gases. They are available in models for 100, 115, and 230VAC, 50/60 Hz. They come complete with user's manual, 3-wire AC line cord for the country of use, and a full 12 month warranty. The IN35 measures 15.5" (39.4 cm) high x 22.25" (56.5 cm) wide x 18.5" (47 cm) deep and weighs 40 pounds (18 kg). The IN45 measures 28.25" (71.75 cm) high x 22.25" (56.5 cm) wide x 18.5" (47 cm) deep and weighs 46 pounds (20.7 kg). All units are UL, CSA, and CE certified.



The chart above shows a typical temperature/time profile that can be stored in memory on an IN35 or IN45 and run at any time.

Chilling/Heating Incubator and Chilling/Heating Mini Circulator

Model IN20 - Translucent Chilling / Heating Incubator

The Model IN20 is a unique Peltier-driven chilling/heating incubator in a number of ways. It is fabricated completely of a green plastic making it translucent and making the samples visible at all times. It has a temperature range from 10.0ºC to 50.0ºC and controls accurately at or near room temperature and through changes in room temperature. It can hold 12 assay plates on 6 shelves in a very small footprint on the bench, and each shelf is made with holes to hold centrifuge tubes. Two shelves hold 60 1.5 ml centrifuge tubes each, two shelves hold 80 0.5 ml centrifuge tubes each, and two shelves hold 192 0.2 ml PCR tubes each in two classic 96 well formats per shelf. The unit has a backlit, 2-line alphanumeric display with 16-characters per line, a built-in 30-day count down timer with alarm and user settable Auto-Off, an RS232 I/O port for data collection and control of the unit by a computer, and a built-in data logger that can collect 4055 data points in 1 second, 1 minute or 5 minute intervals. The unit runs off 12VDC and comes complete with bench top universal power supply that can take inputs from 100 to 260VAC, 50/60 Hz, user's manual, AC line cord for the country of use, and a full 12 month warranty. The IN20 measures 8" (20.3 cm) wide x 14.5" (36.8 cm) deep x 18" (45.7 cm) high and weighs 18 pounds (8.2 kg). It is UL, CSA, and CE compliant.

Model CB20 - Constant Temperature Chilling / Heating Mini Circulator

The Model CB20 is a Peltier-based chilling/heating constant temperature small volume circulator with a temperature range from 4.0ºC to 70.0ºC. It can circulate up to 300 ml/minute of solution from a 1000ml reservoir for controlling the temperature of small remote samples like water-jacketed cuvettes for spectrophotometers. It displays and controls temperature to 0.1ºC. It is accurate to ±0.2ºC. The circulator has a DC operated brushless mini-pump with a variable flow control for pumping exactly the needed amount of temperature-controlled solution for small samples. The unit is very compact, takes very little bench space, and uses very little power. It has a backlit, 2-line alphanumeric display with 16 characters per line that constantly displays target and actual temperature and pumping rate. The membrane switch is used for entering temperature and pump flow rate settings. The unit has an RS232 I/O port for controlling the unit from a computer or for collecting temperature data. The CB20 is provided with brass Swagelok fittings on the rear of the unit that accepts 1/8 inch I.D., – 1/4 inch O.D. plastic tubing. Temperature is sensed with a 3/32 inch diameter stainless steel probe provided. A six-foot long extension for the probe is available as an accessory. The temperature measurement system is 100 ohm platinum RTD for accuracy. Also, included are a12VDC bench top power supply that takes AC inputs from 100 to 260VAC, 50/60 Hz, user's manual, 3-wire AC line cord for the country of use, and full 12-month warranty. The unit measures 6.5" (16.5 cm) wide x 13.625" (34.6 cm) deep x 7" (17.78 cm) high and weighs 6.5 pounds (2.9 kg). The unit is UL, CSA, and CE compliant.

HPLC Column Chiller / Heater and Variable Speed Rotating Mixer

Model C030 - HPLC Column Chiller / Heater

The Model CO30 is an HPLC column chiller/heater with a temperature range from 4.0ºC, or 12 to 16ºC below ambient maximum, to 70.0º. It is accurate to ± 0.2C, readable and settable to 0.1C, and can control temperature to 0.1ºC with its PID control loop software. It is Peltier-driven for both heating and cooling making it CFC free. It has only 2 moving parts, the fans, making it very reliable. It has a very large chamber measuring 15.5" (39.37 cm) high x 6.385" (16.28 cm) wide x 5.125" (13.02 cm) deep. The chamber will easily hold 4-30 cm x 1" columns and a Rheodyne valve. Chamber temperature uniformity is ± 0.5ºC.

The door design is unique in that it opens out and down from the top. All columns, valves and fittings are mounted on the door exposing everything to simple and easy unobstructed access. It has drains in the door for the valve and in the chamber floor for spills. The unit has a liquid crystal display used for showing the chamber temperature and the count down timer. The unit has a 99-hour count down timer with audible alarm and user settable Auto-Off that will shut off the chiller/heater after the count down period. It has an RS232 I/O port for data logging or for controlling the unit from a computer or chromatograph. The CO30 also has a power failure reset system that will reset the unit to the temperature it was running when power returns. It has electronic calibration that is easily reset to local standards if necessary.

The CO30 can be ordered in models for 100 or 115VAC, 50/60 Hz, 2 amp, or 230VAC, 50/60 Hz, 1 amp. It comes complete with user's manual, two sizes of "O" rings for mounting columns, fused and switched AC input module, 3-wire line cord for the country of use, and 12 month warranty. The unit measures 25.5" (64.77 cm) tall x 8.75" (22.23 cm) wide x 13.5" (33.66 cm) deep and weighs 25 pounds (11.26 kg). All are UL, CSA, and CE compliant.

Model RT10 - Variable Speed Rotating Mixer

The Model RT10 variable speed rotating mixer is designed to mix 0.5 and 1.5ml centrifuge tubes in an end over end motion and 15ml and 50ml tubes in a horizontal rolling motion at speeds varying from 4 to 40 rpm using a simple knob control. The unit is provided with a mounting rack that holds 50-0.5 ml centrifuge tubes and 48-1.5ml centrifuge tubes. Accessory racks can be ordered that hold 16-15ml tubes or 6-50ml tubes. Changing from the provided rack to accessory racks can be done in just minutes. The rod holding the racks is easily removed for changing from one rack to another.

The unit is compact measuring only 4.5" (11.43 cm) wide by 13.7" (34 cm) long by 6.75" (17.15 cm) high. It weighs only 5 pounds (2.25 kg). It is powered by a 12VDC power supply that operates from 100 to 260VAC, 50/60Hz inputs. It draws less than 1 amp. The unit comes complete with rotator, racks for 0.5ml and 1.5ml centrifuge tubes, 12 VDC bench top power supply that takes AC inputs from 100 to 260VAC, 50/60Hz, 3-wire AC line cord for the country of use, and user's manual. It has a full 12 month warranty. It is UL, CSA and CE compliant.

See Price list for Accessories holding 15 ml and 50 ml centrifuge tubes.

Digital, DigiLog™ and Analog Stirrers, Hot Plates, and Stirring Hot Plates

Torrey Pines Scientific hot plate product lines include three models of analog, three models of DigiLog™, and four models of digital units. The analog and DigiLog product lines include a stirrer, hot plate and stirring hot plate. The digital product line includes a hot plate with ceramic top, a hot plate with milled-flat cast aluminum top, a stirring hot plate, and a fully programmable stirring hot plate.

About These Products

Heater Tops - We manufacture the entire line with solid ceramic tops. Our digital hot plates also can be ordered with a milled-flat, cast aluminum heater top. The analog and digital units have tops that are 8" x 8" (20.32cm x 20.32cm). The DigiLog tops are 6" x 6" (15.24cm x 15.24cm).

Ceramic Tops - The ceramic tops are solid ceramic glass sheet cut to size and mounted in a cast aluminum frame. The tops are white, flat, and impervious to most chemicals. They are excellent for working with solutions in a vessel. They will heat to 450ºC in about 2 minutes. Ceramic tops heat quickly, but not as evenly as cast aluminum tops.

Milled-flat Cast Aluminum Tops - The cast aluminum tops are milled flat to 0.01" (0.254mm) corner to corner. They are excellent for working with solids directly on the heater surface. They heat more evenly across the surface than the ceramic tops and are not as chemically resistant. Maximum temperature is 400ºC.

Stirrers - All stirring units are specified to stir from 100 to 1500rpm. The stirrers are an optimum combination of motor and magnet to couple strongly with the stir bar in the solution. All units should be able to stir 2 liters of water. The analog and DigiLog units have open loop stirrer controls. All digital units have closed loop stirrer controls and will control stirring speed exactly, even through viscosity changes.

General Construction - All units are housed in cast aluminum chassis and painted with chemically resistant epoxy paint. They are designed to keep spills out of the case. All controls are mounted well forward of the heater top for safety.

Features	Models									
	HP10	ST10	HS10	HP20	ST20	HS20	HP30	HP30A	HS30	HS40
Analog/Hybrid/Digital/Programmable Controls	A	A	A	H	H	H	D	D	D	P
Ceramic or Cast Aluminum Top	C	C	C	C	C	C	C	A	C	C
Plate Surface Size 8" x 8" or 6" x 6"	8 X 8	8 X 8	8 X 8	6 X 6	6 X 6	6 X 6	8 X 8	8 X 8	8 X 8	8 X 8
Heat/Stir/Heat and Stir	H	S	H/S	H	S	H/S	H	H	H/S	H/S
Stirring Speed 100-1500RPM	N/A	YES	YES	N/A	YES	YES	N/A	N/A	YES	YES
Temperature Range in Degrees C	100-450	N/A	100-450	30-450	N/A	30-450	ambient to 450	ambient to 400	ambient to 450	ambient to 450
Plate Hot Indicator	NO	N/A	NO	YES	N/A	YES	YES	YES	YES	YES
Programs Stored in Memory	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES, 10
Steps per Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10
Control Settings Stored in Memory	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES
Temperature Controlled by PID Controller, Plate and Solution	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
Temperature Controlled To	5C	N/A	5C	2C	N/A	2C	1C	1C	1C	1C
Timer with Alarm and Auto-Off	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
RS232 I/O Port	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
2 Liter Stirring Capacity	N/A	YES	YES	N/A	YES	YES	N/A	N/A	YES	YES
Temperature Ramping	NO	N/A	NO	NO	N/A	NO	YES	YES	YES	YES
Temperature Displayed To:	NO	N/A	NO	1% of Range	N/A	1% of Range	1C	1C	1C	1C
Display All Parameters Continuously	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
UL, CSA, and CE Approved	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Digital Hot Plates and Stirring Hot Plates

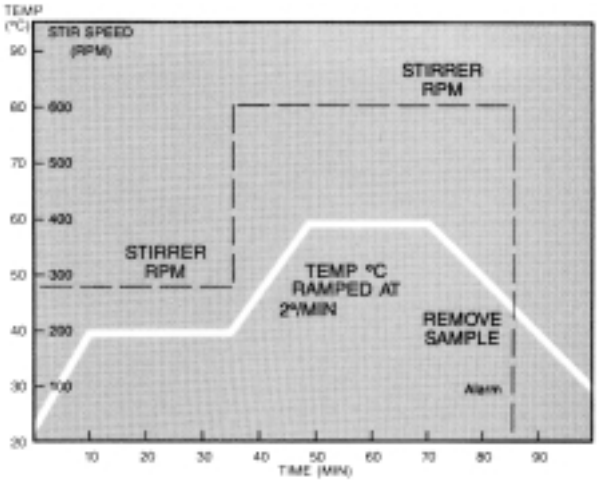
Model HS40 - Fully Programmable Digital Stirring Hot Plate

The Model HS40 is fully programmable through the membrane keypad. It can store 10 programs in memory of as many as 10 steps each where a step is a temperature, temperature ramp rate (if wanted), stirring speed and time. Each program can be instructed to repeat from 1 to 98 times. Setting 99 times will repeat the program infinitely. All programs are stored in CMOS. There are no batteries to replace. The HS40 can be used in the programmable and the non-programmable modes.

The HS40 has a fully featured LCD that displays all parameters all the time. It has a solid ceramic heater top framed in cast aluminum that is very white, very flat, and very chemically resistant. The HS40 will heat and control temperature to 1ºC from ambient to 450ºC, and is accurate to 1% of the setting. It will heat the plate surface to 450ºC in about 2 minutes. It can be set to ramp temperatures up or down from 1ºC to 450ºC per hour. It has a platinum RTD temperature sensor in the heater top and a PID heater control loop designed specifically for setting and controlling the heater top directly. There is a jack on the rear of the unit for an accessory platinum RTD probe for sensing solution temperatures directly. It is tied together with a separate PID control loop designed specifically for controlling solutions in a vessel.

The custom LCD displays both plate and probe target and actual temperatures, stirring speed, count down timer in hours, minutes and seconds to 99 hours with user settable Auto-Off, temperature ramping, and program steps if in the programming mode. The HS40 will stir from 100 to 1500 rpm while controlling to ±10 rpm. The stirrer speed is optically sensed and controlled by the microprocessor regardless of changes in sample viscosity. The unit features electronic calibration that is set at the factory and traceable to NIST and easily reset by the user to local standards if wanted or needed. An RS232 I/O port for controlling the unit or for collecting data is provided. The HS40 is available in 100 and 115VAC, 50/60Hz, 8 amp, or 230VAC, 50/60Hz, 4 amp models. It comes complete with 6-foot 3-wire grounded line cord for the country of use, user's manual and full 12 month warranty. It measures 15.75"(40.01 cm) deep by 9.125" (23.18 cm) wide by 4.75" (12.07cm) high. It weighs 12 pounds (5.4kg). It is UL, CSA, and CE compliant.

See probes and accessories on pg 14.



The chart shows a program that can be stored in memory and run at any time. The program can be set to repeat itself from 1 to 98 times, or infinitely.

Model HS30 - Digital Stirring Hot Plates

The Model HS30 is the easiest to use, fully featured digital stirring hot plate ever made.

It has a solid ceramic heater top framed in cast aluminum that is very white, very flat, and very resistant to chemical spills. The unit will heat and control temperature to 1ºC from ambient to 450ºC, and is accurate to 1% of the setting throughout the entire range. It will heat the plate surface to 450ºC in about 2 minutes using only 600 watts of power in the heater. The unit has a platinum RTD temperature sensor in the heater top and a PID heater top control loop designed specifically for setting and controlling the heater plate directly. There is a jack on the rear of the unit for an accessory platinum RTD probe for sensing solution temperatures directly that is tied together with a separate PID control loop designed specifically for controlling solutions.

continued on the next page

Digital Hot Plates and Stirring Hot Plates

The custom LCD displays both the plate and probe target and actual temperatures, stirring speed, count down timer in hours, minutes and seconds to 99 hours with user settable Auto-Off that will set all functions to zero at the end of a count down timed event, and temperature ramping used to increase or decrease temperature at a given rate. Ramp rates can be set from 1ºC to 450ºC per hour.

The HS30 will stir from 100 to 1500 rpm while controlling the setting to ±10 rpm. The stirrer motor speed is optically sensed and then controlled by the microprocessor in the unit regardless of changes in sample viscosity. The unit features electronic calibration that is set at the factory and traceable to NIST and easily reset by the user to local standards if wanted or needed. An RS232 I/O port for controlling the unit or for collecting data is provided.

The HS30 is available in 100, 115VAC, 50/60Hz, 8 amp, or 230VAC, 50/60Hz, 4 amp models. It comes complete with six-foot, 3-wire grounded AC line cord for the country of use, user's manual and full 12 month warranty. It measures 15.75" (40.01 cm) deep by 9.125" (23.18 cm) wide by 4.75" (12.07 cm) high and weighs 12 pounds (5.4 kg). It is UL, CSA, and CE compliant.

Digital Hot Plate & Stirring Hot Plate

Accessories

HS30-600 – Probe, immersion, 6" stainless steel, platinum RTD, 3' lead

HS30-601 – Probe, immersion, 10" stainless steel, platinum RTD, 3' lead

HS30-602 – Probe, immersion, 6" Teflon, platinum RTD, 3' lead

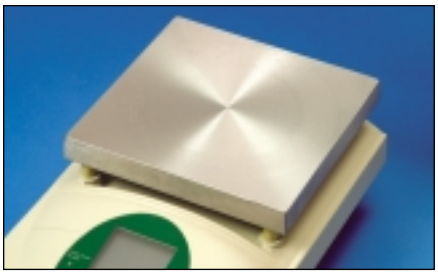
HS30-603 – Probe, immersion, 6" glass, platinum RTD, 3' lead

HS30-700 – Temperature probe calibration kit

Above is a close-up of the membrane switch and display. To set a solution temperature, press the solution icon and then the UP arrow until the desired temperature is displayed. The instrument does the rest. Plate temperature, temperature ramping, stirring speed, and timer are just as simple to set.

Stainless steel probes are fine for most applications. For aggressive solutions Teflon is recommended as long as solution temperatures are below 250ºC. For higher temperatures with aggressive solutions use the borosilicate glass probe.

Models HP30 & HP30A - Digital Hot Plates



Above is the milled flat cast aluminum heater top for the HP30A. This top heats very evenly and is recommended for heating solids directly.

The Digital Hot Plates Models HP30 and HP30A are identical with the exception of the material of the heater top. The HP30 has a solid ceramic heater top and the HP30A has a milled-flat, cast aluminum heater top. The HP30 will heat to 450ºC while the HP30A will heat to 400ºC. The HP30 with ceramic top is recommended for use with aggressive chemicals and high temperatures. The HP30A is recommended for use with any solids placed directly on the heater top. The HP30A's aluminum top heats slower than the ceramic top, but it also heats much more evenly across the surface. It is milled flat corner to corner to better than 0.01" (0.254 mm).

Both units are accurate to 1% over their entire range and will hold a set temperature to 1ºC. The ceramic top will heat to 450ºC in about 2 minutes while the aluminum top will heat to 400ºC in about 10 minutes. Both use 600 watts of heater power. They both have platinum RTD sensors under the plate surface for sensing the plate temperature that is tied together with a PID control loop specific for the heater top being used. Both have a probe jack on the rear of the unit for an accessory probe that is used to sense solution temperatures. They both have a specific PID control loop for controlling solutions in a vessel.

The custom LCD on both displays the plate and probe target and actual temperatures, temperature ramp, and count down timer with alarm and user settable Auto-Off. They feature electronic calibration that is set at the factory and traceable to NIST. Calibration easily can be reset by the user in the field to local standards if wanted or needed. An RS232 I/O port is provided for collecting data or for controlling the units from a computer.

The HP30 and HP30A are available in 100 and 115VAC, 50/60 Hz, 8 amp, and 230VAC, 50/60 Hz, 4 amp models. They come complete with 6-foot 3-wire grounded AC line cord for the country of use, user's manual and full 12 month warranty. They measure 15.75" (40.01 cm) deep by 9.125" (23.18 cm) wide by 4.75" (12.07 cm) high. They weigh 12 pounds (5.4 kg). They are UL, CSA, and CE compliant.

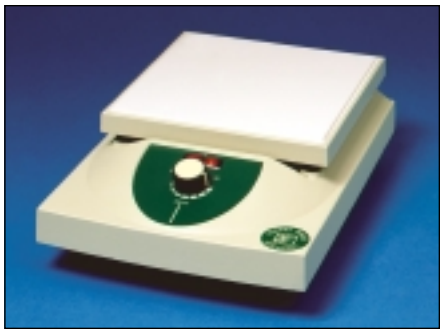
Analog Stirrers, Hot Plates and Stirring Hot Plates

There are three models of analog units. They are a magnetic stirrer Model ST10, hot plate only Model HP10, and stirring hot plate Model HS10. All are made in the same cast aluminum chassis painted with chemically resistant epoxy paint. They are designed to keep spills out of the case, and they have the controls mounted well forward of the heater top for safety. Heating and stirring controls are solid state with an individual indicator lamp that illuminates when the control is on. All have the same very white, very flat and very chemically resistant ceramic glass 8" (20.32 cm) by 8" (20.32 cm) top mounted in a cast aluminum frame. All heaters are 600 watts.

The stirrer features a solid-state control capable of stirring aqueous solutions from 100 to 1500 rpm. The control has an OFF position fully counter-clockwise, and is continuous over 270º of rotation from minimum to maximum. The magnet is a circular disc with twenty pounds of pull strength capable of stirring more than two liters of aqueous solution.

The heater control has OFF, LO, and HIGH positions for quick setting, and a smooth infinite control of about 270º between LO and HIGH. The heaters will regulate to about ± 2.5ºC of the set temperature once it stabilizes. All units are fused for safety.

The ST10 is available in 100VAC, 50 Hz, 1.0 amp; 115VAC, 60 Hz, 1.0 amp; 220VAC, 60 Hz, 0.5 amp; and 230VAC, 50 Hz, 0.5 amp. The HP10 is available in 100VAC, 50/60 Hz, 8 amp, 115VAC, 50/60 Hz, 8 amp, and 230VAC 50/60 Hz, 4 amp. The HS10 is available in 100VAC, 50 Hz, 8 amp; 115VAC, 60 Hz, 8amp; 220VAC, 60 Hz, 4 amp, and 230VAC, 50 Hz, 4 amp. All models are 13" (33 cm) deep by 9" (22.9 cm) wide by 3.5" (8.9 cm) high. The HP10s weigh 8 pounds (3.6 kg). The ST10's and HS10's weigh 10 pounds (4.5 kg). All are complete with grounded 3-wire detachable AC line cord for the country of use, users manual, and full 12 month warranty. All are UL, CSA, and CE compliant.



DigiLog™ Stirrers, Hot Plates and Stirring Hot Plates

The new Digilog series represents state of the art electronic technology applied to simple hot plates and stirrers. In effect, these units are hybrids of analog and digital units combining features of both to make reliable, easy to use units that are priced like simple analog units. Here are some features:

Digital Features

- 3- digit display of heater power as a percent of total range for easy resetting. No need to mark the heater knob or front panel.
- Membrane keyboard setting of all parameters. Easy scroll up or down settings. No mechanical controls at all!
- Two memory keys for saving your 2 favorite combinations of temperature and stirring speed for one button instant recall at any time.
- "Plate Hot" red LED illuminates when plate temperature goes above 50ºC and stays lit when the plate is hot even after the unit is turned off. A really nice safety feature.
- Main power ON/OFF button on the front panel for easy, safe access. Prior settings are retained when the unit is turned off and the unit will return to those settings automatically when turned on again.
- Indicator lights and ON/OFF buttons for heater and stirrer power. Turn either off with a single button. Turn on again and the prior settings remain.
- Heater power regulated even through changes in line voltage. Heater temperature stays much more stable than standard analog units.
- Low plate temperature settings as low as 30ºC.
- Heater drive software written to go up to setting quickly. Reduced heating times.

Analog Features

- Inexpensive price. These units cost less than most strictly analog units.
- Compact size. They are 10" (25.4cm) deep by 7" (17.78cm) wide by 4.5" (11.43cm) high.
- Ruggedness. Will support over 30 pounds (13.5kg).
- Simple to use. Scroll up and scroll down settings.
- Simple to service if needed. Service by anyone. No special training required.
- Fused AC input line.

continued on the next page

DigiLog™ Stirrers, Hot Plates and Stirring Hot Plates

Three models of DigiLog units are available: a hot plate Model HP20, a stirrer Model ST20 and a stirring hot plate Model HS20. All use the same compact, rugged cast aluminum chassis that is designed to keep spills out of the case. All controls are mounted forward of the heater plate for safety. All electronic controls are on one simple PC board, and all controls have red indicator LED's that illuminate when activated.

The stirrer features a circular disk magnet capable of lifting 20 pounds (9kg) coupled to a strong stirrer motor, making these units capable of stirring 2 liters of aqueous solution. The stirrer range is from 100 to 1500 rpm.

The heating units, Models HS20 and HP20, will heat to 450ºC in less than 5 minutes using just 400 watts of heating power. The heater is set using a digital display and UP/DOWN arrows to set the heater power in percentage of full power in 1% increments. The lowest setting is below 30ºC on a setting of 1%. The 50% setting is roughly one half of 450ºC or about 250ºC when the ambient room temperature is added. This type of control and indicator is not designed to give an exact temperature setting, just an easily repeated setting. Once the temperature reaches its set point, it will hold that temperature within ±2.0ºC.

There are two MEM (memory) keys on each unit, MEM1 and MEM2. Two frequently used heating/stirring combinations may be saved in memory. Simply set the stirrer and heater to those settings and then push and hold the MEM1 or MEM2 key depressed until the beep sounds. Those settings are saved to memory. The next time that sample is run, just place it on the unit and touch the memory key. The previously set heat and stir values will be run automatically.

ST20: available in 100VAC, 50HZ, 0.5 amp; 115VAC, 60HZ, 0.5 amp; 220VAC, 60 Hz, 0.25 amp; and 230VAC, 50 Hz, 0.25 amp. HP20: available in 100VAC, 50Hz, 5 amp; 115VAC, 60Hz, 5 amp; and 230VAC, 50Hz, 2.5 amp. HS20: available in 100VAC, 50Hz, 5 amp; 115VAC, 60Hz, 5 amp; 220VAC, 60Hz, 2.5amp; and 230VAC, 50Hz, 2.5 amp. All models are 10” (25.4cm) deep by 7” (17.78cm) wide by 4.5” (11.43cm) high. The HP20 weighs 6 pounds (2.7kg), and the HS20 and ST20 weigh 7 pounds (3.15kg) each. All come complete with 3-wire AC line cord for the country of use, user's manual, and full 12-month warranty. All are UL, CSA and CE compliant.

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